DR 2800™ Portable Spectrophotometer

The Hach DR 2800 Portable Spectrophotometer offers automatic method detection when used with TNTplus reagent vials. It also has an intuitive touch screen user interface and accommodates a wide range of pre-programmed water analysis methods. The small footprint is an advantage whenever you need a reliable portable analytical tool.

Features and Benefits

More than 240 Analytical Methods and Chemistries

The Hach DR 2800 Portable Spectrophotometer can be used for more than 240 analytical methods. (Test parameters are listed on page 3.) These methods include more than 20 new TNTplus™ reagent vial tests that provide innovative barcode labeling for reliable, automatic method detection. All of the chemistries and supplies needed for these tests are available from Hach. The spectrophotometer can store up to 50 user programs and 500 data points, including sample and operator ID.

Use a USB Memory Stick to Update the Instrument or Transfer Data

Easily update DR 2800 spectrophotometer systems and transfer measurement data with a USB memory stick. Use it to stay current as Hach releases new test methods and chemistries. Two USB ports on the instrument allow for a computer to be connected in one port, when used with an upcoming software package, while the other is used to connect the spectrophotometer to a memory device or hand-held bar code scanner.

Detect and Run Analytical Methods Automatically

More than 20 new vial tests are available with integrated bar codes. The DR 2800 spectrophotometer automatically reads the bar codes to detect the appropriate test procedure. Less time is spent testing and potential errors are reduced, resulting in increased productivity and confidence in test results.

Small Footprint and Large Touch Screen Interface

The small footprint of the DR 2800 spectrophotometer—only 8.5 by 13 inches—lets it easily fit into any lab as well as being completely portable. The touch screen display is intuitive to use and ergonomic in design.

Runs on Either Line Power or Battery Power

Use the DR 2800 spectrophotometer in the lab with regular line power or in the field with the optional lithium-ion battery.

Accommodates Multiple Cell Sizes and Sample Delivery Methods

The DR 2800 spectrophotometer holds eight types of Hach cells—including 1-in. square cells, 1x5-cm cells, 13-mm round cells (TNTplus), and 16-mm round cells. Three adapters are included with the spectrophotometer for other vial types such as 1-in. round/AccuVac® cells, multi-path 1-in./1-cm cells, 1x1-cm square cells, and Pour-Thru™ cells. The optional Pour-Thru cell kit is ideal for rapid liquid methods when high throughput of analysis is needed.

TNTplus Reagent Vials Designed for the DR 2800 Spectrophotometer

Hach has developed TNTplus reagent vials for selected analytical methods that provide the following features when used with the Hach DR 2800 Portable Spectrophotometer:

- *Automatic method detection—the spectrophotometer automatically reads the bar code, identifies the appropriate method, and takes the measurement to help eliminate human error, saving time and money.*
- *No reagent blank is necessary—high quality vials, tight regent production controls, 10-absorbance readings averaged for results determination, instrument calibration verification, and negligible instrument drift, all combine to eliminate the need to run reagent blanks.*
- *Built-in accuracy—while rotating the vial, the spectrophotometer takes 10 absorbance measurements in less than 5 seconds. The average value is used to calculate the results.*

DW WW PW IW E FB

***DW** = drinking water* *WW = wastewater municipal* ***PW** = pure water / power*
IW = industrial water ***E** = environmental* *C = collections* ***FB** = food and beverage*

HACH®

Be Right™

Specifications*

Operating Mode
Transmittance (%), Absorbance, and Concentration

Source Lamp
Tungsten

Pre-Installed Programs
More than 240

Available User Programs
50

Data Storage
500 points

Export Capability
.csv (comma-separated values) file format

Wavelength Range
340 to 900 nm

Wavelength Accuracy
±1.5 nm

Wavelength Resolution
1 nm

Spectral Bandwidth
5 nm

Wavelength Calibration
Internal, automatic at power-on, visual feedback

Wavelength Selection
Automatic: based on selected method
Automatic: based on barcode printed on TNTplus™ reagent vials
Manual: from the touch screen in all modes except stored methods

Enclosure Rating
IP 41

Operating Temperature
10 to 40°C (50 to 104°F)

Operating Humidity
80% relative humidity, non-condensing, maximum

Storage Requirements
Temperature: -25 to 60°C (-13 to 140°F)
Humidity: 80% relative humidity, non-condensing, maximum

Power Requirements
Line: 100 to 240 V; 47/63 Hz; automatic changeover
Battery: Lithium-Ion 11V/4400mAh

Interface
USB 1.1 (10 ft. (3 m) cable, maximum)

Languages
English, French, German, Italian, and Spanish (please contact your Hach representative for availability of additional languages)

Connections
USB Master 1x
USB Slave 1x

Sample Cell Compatibility
1-inch square
1-inch round
1-cm square
1x5-cm
13-mm round
16-mm round
Multipath 1-inch/1-cm
Pour-Thru™ with 1-in. path length

Accessories
Included:
– 1-in. square matched glass sample cells
– Cell adapters for 1-inch round/ AccuVac cells, 1x1-cm cells, and multi-path 1-inch/1-cm cells
– Universal power supply, 100 to 240V, 47/63Hz, with plug adapters for EU, GB, US, China
– Protective cover for storing adapters
– Dust cover

Optional:
– Hach Pour-Thru cell
– USB hand-held barcode scanner
– External USB keyboard
– Rechargeable lithium-ion battery

Dimensions
216 x 132 x 330 mm (8.5 x 5.2 x13.0 in.)

Weight
Without battery: 4.06 kg (8.95 lbs.)
With battery: 4.38 kg (9.65 lbs.)

**Specifications subject to change without notice.*

Engineering Specifications

1. The spectrophotometer instrument shall be a multi-wavelength spectrophotometer designed for laboratory or field analysis of multiple analytes.
2. The instrument shall be capable of measuring the following substances or characteristics: alachlor; aluminum; arsenic; atrazine; barium; benzotriazole; boron; bromine; cadmium; chloride; chlorine dioxide; chlorine; chromium; cobalt; color; copper; cyanide; cyanuric acid; dissolved oxygen; fluoride; formaldehyde; hardness; hydrazine; iodine; iron; lead; manganese; mercury; molybdenum/molybdate; monochloramines; nickel; nitrogen (as ammonia, nitrate, nitrite, total nitrogen); chemical oxygen demand; oxygen scavengers; ozone; polychlorinated biphenyls; phenols; phosphonates; phosphorus; potassium; quaternary ammonium compounds; selenium; silica; silver; sulfate; sulfide; surfactants; suspended solids; tannin and lignin; total organic carbon; tolyltriazole; total petroleum hydrocarbons; trihalomethanes; toxicity; volatile acids; and zinc.
3. The following tests shall conform to USEPA-approved methods: arsenic; chlorine (free); chlorine (total); chlorine dioxide; chromium (hexavalent); copper; fluoride; iron (total); lead; manganese; nickel; nitrogen (ammonia); nitrogen (nitrite); chemical oxygen demand; phenols; phosphorus (reactive); phosphorus (total); sulfate; sulfide; and zinc.
4. The wavelength range of the instrument shall be 340 to 900 nm with accuracy of ±1.5 nm, resolution of 1 nm, and maximum bandwidth of 5 nm.
5. The instrument, depending on the test selection, shall automatically select the wavelength.
6. Readout modes shall include transmittance, absorbance, and concentration.
7. The interface of the instrument shall be graphical with touch screen.
8. The instrument shall provide graphical display and be capable of printing test results.
9. The instrument shall be equipped with storage capacity for 500 data points (date, time, results, sample ID, user ID) and 50 user-defined calibrations.
10. Information stored in the instrument shall be capable of being downloaded in standard report format.
11. The instrument shall be capable of accepting 1-in. (25.4-mm) round cells/vials, 1-in. square cells, 13-mm round cells, 16-mm round cells, 1x5-cm cells, and Pour-Thru cells with 1-in. path.
12. Power requirement shall be line voltage or optional battery pack.
13. The instrument shall be warranted for one full year against defects in materials and workmanship.
14. The instrument shall be model DR 2800 Portable Spectrophotometer, manufactured by Hach Company

Available Tests

The following table lists available tests and overall ranges for the Hach DR 2800 Portable Spectrophotometer. The ranges may represent more than one available test for the instrument. Consult your Hach representative, customer service, the Hach Products for Analysis catalog (Lit #2436), the Hach Laboratory and Field Products for Water Analysis catalog (Lit #2401), or the Hach web site at www.hach.com for complete details of all available tests for this instrument.

Parameter	Range	TNTplus Test
Alachlor	Low ppb	
Aluminum	0.002 to 0.800 mg/L	•
Ammonia, Nitrogen	0.015 to 50.0 mg/L	•
Arsenic	0.020 to 0.200 mg/L	
Atrazine	Low ppb	
Barium	2 to 100 mg/L	
Benzotriazole	0.2 to 16.0 mg/L	
Boron	0.02 to 14.0 mg/L	
Bromine	0.05 to 4.50 mg/L	
Cadmium	0.7 µg/L to 300 mg/L	•
Carbohydrazide	5 to 600 µg/L	
Chloramine, Mono	0.04 to 10.0 mg/L	
Chloride	0.1 to 25.0 mg/L	
Chlorine Dioxide	0.01 to 1000 mg/L	
Chlorine, Free	0.02 to 10.0 mg/L	
Chlorine, Total	2 µg/L to 10.0 mg/L	
Chromium, Hexavalent	0.010 to 1.00 mg/L	•
Chromium, Total	0.01 to 0.70 mg/L	•
Cobalt	0.01 to 2.00 mg/L	
Color	15 to 500 units	
COD (Oxygen Demand, Chemical)	0.7 to 15,000 mg/L	•
Copper	1 µg/L to 5.00 mg/L	
Cyanide	0.002 to 0.240 mg/L	
Cyanuric Acid	5 to 50 mg/L	
DEHA (Diethylhydroxylamine)	3 to 450 µg/L	
Dissolved Oxygen	6 µg/L to 40 mg/L	
Erythorbic Acid (Isoascorbic Acid)	13 to 1500 µg/L	
Fluoride	0.02 to 2.00 mg/L	
Formaldehyde	2 to 500 µg/L	
Hardness, Total (Calcium and Magnesium as $CaCO_3$)	4 µg/L to 4.00 mg/L	
Hydrazine	4 to 600 µg/L	
Hydroquinone	9 to 1000 µg/L	
Iodine	0.07 to 7.00 mg/L	
Iron, Ferrous	0.02 to 3.00 mg/L	
Iron, Total	0.009 to 3.00 mg/L	

Parameter	Range	TNTplus Test
Lead	3 µg/L to 2.00 mg/L	•
Manganese	0.006 to 20.0 mg/L	
MEKO (Methylethylketoxime)	15 to 1000 µg/L	
Mercury	0.1 to 2.5 µg/L	
Molybdenum, Molybdate	0.02 to 40.0 mg/L	
Nickel	0.006 to 6.00 mg/L	•
Nitrate, Nitrogen	0.01 to 35 mg/L	•
Nitrite, Nitrogen	0.002 to 250 mg/L	•
Nitrogen, Total	0.5 to 150 mg/L	•
Nitrogen, Total Inorganic	0.2 to 25.0 mg/L	
Nitrogen, Total Kjeldahl	1 to 150 mg/L	
Ozone	0.01 to 1.50 mg/L	
PCB (Polychlorinated Biphenyls)	Low ppb	
Phenols	0.002 to 0.200 mg/L	
Phosphonates	0.02 to 125 mg/L	
Phosphorus, Acid Hydrolyzable	0.06 to 3.50 mg/L	
Phosphorus, Reactive (Orthophosphate)	19 µg/L to 100 mg/L	•
Phosphorus, Total	0.06 to 100 mg/L	
Potassium	0.1 to 7.0 mg/L	
Quaternary Ammonium Compounds	0.2 to 5.0 mg/L	
Selenium	0.01 to 1.00 mg/L	
Silica	3 µg/L to 100 mg/L	
Silver	0.005 to 0.700 mg/L	
Sulfate	2 to 70 mg/L	
Sulfide	5 to 800 µg/L	
Surfactants, Anionic (Detergents)	0.002 to 0.275 mg/L	
Suspended Solids	5 to 750 mg/L	
Tannin and Lignin	0.10 to 9.00 mg/L	
TOC (Total Organic Carbon)	0.3 to 700 mg/L	
Tolyltriazole	1.0 to 20.0 mg/L	
Toxicity	0 to 100% Inhibition	
TTHM (Trihalomethanes, Total)	10 to 600 µg/L	
TPH (Total Petroleum Hydrocarbons)	Threshold, low ppm	
Volatile Acids	27 to 2800 mg/L	
Zinc	0.01 to 3.00 mg/L	

Ordering Information

DR 2800-01	DR 2800 Portable Spectrophotometer; includes printed instrument manual, procedure manual on CD-ROM, universal power supply with exchangeable plug adapters for EU, GB, US, and China, and 1-in. square matched glass sample cells
DR 2800-01B	Same as above, but includes a Lithium-ion Battery Pack

Replacement Parts

LZM610	Power Supply; 100 to 240V, 47 to 63 Hz, international (exchangeable plug adapters for EU, GB, US, and China)
LZV583	Adapter A; 1-cm square cells
LZV585	Adapter B; multi-path cell, 1-in./1-cm, or Pour-Thru cell
LZV584	Adapter C; 1-in. round cells
LZV565	Replacement Bulb; 6V, 10W
LZV642	Protective Cover for storing adapters
LZV646	Light Shield
HYH019	Dust Cover

Optional Accessories

59404-00	Pour-Thru Cell Kit; includes 1-in. Pour-Thru cell and holder, funnel, and tubing
27639-00	DR/Check Absorbance Standard Set (4 pcs.)
LZV582	USB Keyboard
LZV566	USB Hand-held Barcode Scanner
LZV551	Battery Pack (lithium-ion 11 V/4400 mAh)

To complete your laboratory analytical instrumentation, choose from these new chemistries...

TNTplus™ Reagent Vials

New Hach TNTplus reagent vials are bar-coded for automatic method detection and auto-blanking when used with the DR 2800 Portable Spectrophotometer to save time, minimize errors, and reduce laboratory costs. Superior glassware provides the best precision and the vials flat bottom improves handling in the lab. (For a complete list of available TNTplus parameters, see the table on page 3)

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At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

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